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SOME EXTRACTS FROM A SHOOTER'S NOTE-BOOK.

FROM JANUARY 6TH, 1866, TO JANUARY 23RD, 1867,
INCLUDING THE GREAT FROST OF THE LATTER YEAR.

BY ROBERT WARREN.

January 6th, 1866.—The weather has been incessantly wet and stormy since December 21st, and the country is very much flooded, water seen lying in most of the pasture-fields. To-day I shot a fine specimen of the Iceland Gull, in the lodge field, where for some days past it had been feeding after the plough with the Black-headed Gulls. From its stage of plumage it is a bird apparently in its second year. As is usual with most Iceland Gulls, it was very tame, allowing me to walk up close within shot.

12th.—Yesterday, on the shore near Roserk Abbey, I noticed a small Sandpiper, in the company of Greenshanks. On flying off it uttered a peculiar, loud cry, which I recognized as the cry of the bird that I saw on two occasions at Roserk, and once, when returning from hunting near Kilglass, it was flying very high, frequently uttering its loud and very peculiar cry.

This evening it was seen on the Moy View shore, but being too late to look after it, I was obliged to postpone my search until next morning.

13th.—Early this morning, went in search of the Sandpiper, but saw nothing of it along the shore. However, before returning, I thought of looking at a little pond, situated just inside the shore fence, but quite surrounded by bushes and trees. Cautiously looking over the wall, I saw the little stranger

running along the edge of the water, quickly snapping up the insects it was feeding on. After a few moments watching it, I thought it better not to delay and perhaps lose my chance of obtaining it, so I fired, knocking it over dead, and on picking it up recognized it as the Green Sandpiper, so rare in this locality that I have known of only one other specimen, obtained by a friend and, by a strange coincidence, shot in the very same pond at Moy View. In its flight and appearance when slowly flying along the shores it gives one the idea of a small Green-shank; the colour and shape of the wings are very similar.

February 19th.—This morning, as I was riding along the sands at Enniscrone, on the look-out for any rare birds that might turn up, I observed an Iceland Gull by the river, among a lot of Herring-Gulls. It was much darker in colour than the bird shot on January 6th, and though wilder than this species usually is, was evidently in its first year's plumage. We had some snow on the 16th and 17th, but it is all off to-day. The barometer for some days past has stood at 30°, weather looking as if going to hold fine for a few days.

March 22nd.—Barometer still high; weather fine.

April 11th.—The Sandwich-Terns have arrived, and were seen and heard, very noisy, as they usually are on their arrival. They are rather late this season. One year I observed them as early as March 25th, and another year on the 28th, when snow was lying on the ground and the thermometer indicating six degrees of frost, and they were as lively and noisy as if it was the middle of May.

16th.—Swallows seen flying about the river near Belleck Manor to-day.

20th.—Willow-Wrens heard at Moy View.

21st.—Cuckoo and Land-Rails heard at Moy View, the latter being numerous this season.

29th.—A pair of Spotted Flycatchers on trees of garden and farmyard.

June 2nd.—Saw a large flock of Bar-tailed Godwits on the sands just off the shore here; two of the Godwits were dark on the back and had very red breasts and very dark legs, but whether they were black-tailed or bar-tailed, assuming their summer plumage, I cannot say. However, all the others (at



least a hundred) appeared in the winter grey plumage. It is a strange and remarkable fact that of the hundreds of Bar-tailed Godwits continuing on the sands of the estuary, perhaps not one in a hundred of the birds when leaving for their northern haunts ever exhibit their breeding plumage.

July 4th.—A pair of Spotted Flycatchers have had a nest in the garden, but reared only one young bird, leaving two addled eggs in the nest.

August 14th.—To-day, in the bog at Castletown, saw what I think was a male Hen-Harrier flying about the bog; it appeared of the grey colour of the male, but the ends of the wings appeared darkish. However, from its mode of flight being low and its flying backwards and forwards like a setter, it certainly was some species of Harrier.

September 28th.—Wigeon have arrived; to-day I fired at and wounded one, but without securing it.

October 28th.—For the first time, to-day I saw a flock of Long-tailed Tits, in the Fort Field plantation, the only time that I ever met this species at Moy View. They had probably wandered down from the woods of Belleck Manor, the demesne of Sir Arthur Knox Gore.

January 1st, 1867.—The greater part of November and December was very wet and stormy, but with a mild temperature, there being only one night's hoar frost early in December; but the 30th and 31st were very wild and cold. On the morning of January 1st heavy hailstorms began, and about 11 a.m. a fearful gale of wind set in from the north, with snow-showers. This continued all day, but the wind fell during the night, leaving the ground covered with snow to a depth of three inches, accompanied by a sharp frost.

2nd.—A very hard frost last night, with snow.

3rd.—Frost very severe last night, with some snow-showers, and being very calm the snow froze in beautiful crystals on the branches of the trees, giving an ideal snow-scene. The birds looked very miserable, having no place to feed, for, owing to the calm, the snow drifting under the bushes covered their ordinary feeding-grounds, so for the two days past they had to take to the shore and search for sandhoppers and such food among the seaweed and along high-water mark, as soon as the

tide left the shore, when Rooks, Blackbirds, Thrushes, Sky-Larks, Chaffinches, and other small birds were enabled to keep alive. But the long-billed waders were in a bad plight also, in consequence of the short time they had for feeding during the ebbing of the tide, before the sands were hard frozen and quite impervious to their soft, slender bills, probing the sand in search of Sand-eels and Lug-worms. Owing to the snow on the ground under the furze and other bushes in the plantations, very few Woodcocks were to be seen; going through the plantations to-day I only met five birds, one couple of which I shot, being unlucky with the others.

4th.—A very hard frost last night, and held all day, accompanied by a dense fog, as usual, forming beautiful crystals on the trees and bushes. The birds are very weak, and still keep to the shores. Some parts of the shore are covered by ice left by the ebb tides, while Kilanly Bay is one sheet of unbroken ice; there are also quantities among the islands near Reserk Abbey and in many places connecting the islands with the Abbey land, the channels between many of them being closed by fixed ice, and no place left open for either Ducks or Wigeon to feed.

5th.—Very little frost last night, but a bitter east wind blowing this morning, and the birds are suffering very much from this intense cold, as well as from want of food. The increased cold caused by this was severely felt by the birds, especially by the Starlings, many making attempts to enter the house in search of warmth through the windows, wherever open, and even going down the chimneys; while others got into holes under the eaves for shelter, and into the stables and cattle-houses. Many were found dead in the places they went for shelter. I found a Blackbird and Rook dead, and met many Curlews very weak, some being scarcely able to fly off when approached, and in consequence of not being able to feed on the sands, or in the open fields, they frequented the plantations, searching for food, and along the hedges and sides of fences.

6th.—A thaw has set in very rapidly, melting the snow, but it will take a long time before this heavy snowfall disappears.

7th.—Thaw still continues, with rain, and large quantities of sheet-ice are floating down with the ebb-tide from the upper

reaches of the river ; but there is a great deal of snow still lying on the level fields and sheltered hollows.

11th.—Some more hail-showers last night, and this morning the ground is well covered. Frost again set in this evening, with wind from north-east.

12th.—More snow and hail-showers from north-east last night and at intervals during the day, while the wind has risen, and some frost with every appearance of its continuing, the birds again beginning to suffer and resorting to the shores. A large flock of Wild Geese came down from inland, flying low and evidently going to pitch in the shore field, when something alarmed them and, rising higher, they resumed their flight towards Bartragh.

13th.—A large quantity of hail and snow fell last night, covering the ground to a depth of seven inches, but it has drifted very deep in some places.

14th.—More snow last night, covering the ground much deeper in the level fields, as well as increasing the drifts, which are three feet deep right across the middle avenue, stopping all car traffic. I went out to-day and shot two couple of Cocks, missing some others that so deftly dodged me between the snow-covered trees. However, I afterwards went to Halliday's and Wright's fields, to search the open, unfrozen drains for Snipe. I shot three brace: a brace of Quail that rose from a bunch of briars alongside a fence; a brace of Water-Rails, a Water-Hen, and two others caught by my Water-Spaniel "Floss." In the evening I went to the little marsh at Kilanly, but seeing nothing there I returned along the shore. While passing the little muddy bay (just cleared of ice by the ebbing tide), I observed a Redshank some distance off, feeding on the mud, and though a long way off, as I wanted to discharge my gun previous to washing, I fired and, to my surprise, knocked it over dead. My Water-Spaniel "Floss" fetched it in, and on taking it from her I remarked that the bill and legs appeared longer and sligher than those of the Common Redshank. However, in the bad light I took no farther notice, but on my return, taking the birds out of the game-bag to hang up for the night, I again examined the stranger, when to my great surprise and delight it proved to be a specimen, in winter plumage, of the rare

Spotted Redshank, and the second specimen known at that date to have been captured in Ireland, the first being obtained by the late William Thompson, of Belfast, the well-known author of the 'Natural History of Ireland.' In his second volume, page 200, he describes its capture:—"When a very young sportsman, and out shooting on Holywood Rabbit Warren, bordering on Belfast Bay, on the morning of August 22nd, 1823, I perceived at a distance a solitary bird, whose call resembled that of the Redshank but somewhat different, winging its way over the sea towards Belfast. To my surprise and delight, however, the stranger made a sudden turn and alighted on the beach at a short distance, which was scarcely done until it became my victim. Immediately on lifting the bird, though I had never seen one before, I knew it to be the Spotted Redshank, from recollection of Bewick's beautiful figure of the species."

15th.—Heavy frost last night and some snow, with a dense fog, freezing on the trees in beautiful crystals, affording an ideal Arctic scene of great beauty. The frost became very severe at three o'clock, and poor "Floss" is very uncomfortable, covered by all over the frozen snow and fog. This morning the sands were covered with a sheet of frozen snow and ice which, rising with the flood tide, was thrown up on the shore, covering all the feeding-grounds of Ducks and Wigeon, which were obliged to resort to the shores of the islands and feed on the sloak or laver growing on the stones below tide-mark, before they were frozen after the tide ebbed.

To-day I shot one Cock, and along the unfrozen drains in Wright's field three brace of Snipe and a Jack; also, along the shore, some Ringed Plovers and a Redshank; and found a Red-wing and Rook starved to death. All the birds becoming very weak, it is difficult to understand how they are able to exist, with the ground so long covered by the frozen snow.

16th.—To-day I shot one Cock and four brace of Snipe in the unfrozen drains. The ice has broken up on the estuary and tidal parts of the river as far as Killanly and Roserk, but is closed from those places up to the shipping quay, a distance of one and a-half miles. To-day a boat rowed up the river, but was stopped by the barrier of ice and obliged to return to Ennis-crone. The starving Rooks have been attacking the weaker

birds, like Hooded Crows, and destroying numbers; to-day I saw a Rook attack a poor weakly Fieldfare and tear it to pieces in a short time. The Magpies are also feasting on the unfortunate starving birds and committing great destruction.

17th.—The frost still continues with great severity, with no sign of change. To-day I shot one Cock, three brace of Snipe, and a Grey Plover. The ice is still closed across the river at Killanly and Roserk, though quite broken up below those places, and being lifted by the rising spring tides, is left by the ebb tide in large quantities along the shore, some sheets being over three inches thick. With a fall of the barometer and a cloudy sky, about 11 a.m., the snow began to soften, as if indicating a change. But about 9 p.m. the frost returned and set in with its usual severity.

18th.—The heavy frost still continues, but the rising tides are breaking up the ice, and to-day the river is clear as far as Castleconnor, the ebb tide drifting down large quantities, some sheets being three and four inches thick. As I was coming out of the shore field, at the end of the double fence, I saw a splendid Wild Swan flying down the river and pitching on the water just opposite, then looking about and uttering low-toned calls resembling the words "hong, hong, awe," afterwards swimming down the estuary until lost to sight in the dense fog. The bird, by its calls, was evidently a Bewick's Swan, and since then, having frequently heard the calls of other Swans from time to time, have no doubt of its species. To-day I shot three brace of Snipe in the drains of Wright's field, and a Duck in the drain of Goodwin's Hill, losing a wounded Mallard.

19th.—The frost still continues, with a bitterly cold easterly wind, but as yet no sign of change, though the ice on the tidal part of the river is being rapidly broken up by the spring tides, and the river is now clear up to Castleconnor Point; but neither steamer nor sailing ship can pass that barrier of ice. A schooner to-day attempted to force her way up to the shipping quay, and although with a fair wind and all sails set, when meeting the icy barrier she was brought to with a shock that almost brought the masts out of her, and recoiling from the shock she was brought to anchor, her commander, thinking discretion the better part of valour, sitting down quietly and waiting for the

final break-up of the ice before attempting to reach the shipping quay. To-day I shot one couple of Cocks, and at the drains three brace of Snipe, while in the morning four Wigeon, as they fed near the shore, and in the evening a Duck and Mallard, as they were feeding in the little muddy bay at this side of the Point.

20th.—There was but little frost last night, the snow still covering the fields without any appearance of thawing. I have heard of great numbers of Cocks shot along the shores of Easkey and Enniscrone, as they were lying among the rocks and stones, after feeding among the seaweed when the tide was out. I even heard of boys knocking down with sticks a good many as they rose from behind the rocks near which they were lying.

21st.—A heavy gale last night, which has collected the snow into great drifts across many of the roads, that between Castleconnor and Ballina being quite impassable for either cars or horses.

22nd.—This is the first day that a general thaw has set in, and is proceeding rapidly, a great relief to the poor sheep and cattle, which have been without a bite of grass for twelve days.

23rd.—The ground is at last clear of snow, having been covered for twelve days, and the navigation of the river and estuary closed for six days.

And so ended the great snowstorm and severe frost of January, 1867, that will be long remembered.

BIRDS TRAVELLING NORTH IN OCTOBER.

By J. H. GURNEY, F.Z.S.

ON October 7th, with a gentle wind from the north, from earliest dawn continual flocks of Lapwings, Starlings, Herring-Gulls and, I believe, Lesser Black-backed Gulls, accompanied by Redwings, Sky-Larks, Chaffinches, and Rooks, singly or in small parties, and a few detachments of Black-headed Gulls and Wild Ducks, and two skeins of Geese were seen by Mr. Henry Cole and the writer, and others as well, passing over the adjacent parishes of Overstrand, Northrepps, and Cromer, which are all on the coast. Estimates of numbers are proverbially untrustworthy, but undoubtedly a great mass of birds went by altogether.

The birds were high overhead, and for some hours every flock was proceeding due north, but after 11 a.m. they inclined to north north-west, and their numbers slackened, and by 1 o'clock the migration was practically over.

I have seen similar northward passages of birds on a much smaller scale near the coast before in October, and believe it to be almost an annual movement, and the same has been remarked by Mr. B. B. Riviere (*see* 'Norwich Naturalists' Transactions,' 1913-14, p. 772), and at Lowestoft by Mr. C. B. Ticehurst.

At this time of the year north or north-west is not quite the direction in which one expects birds to travel, but the movement is probably attributable to wind which, when even quite of moderate strength (force 2 or 3), may be seen to exercise a great influence over birds on the East Coast, and against which they may be usually observed to fly. On this point see Hele's 'Notes about Aldeburgh,' p. 122, and 'The Field' of November 6th, 1875, and October 14th, 1876, where the experience of the writer confirms this observation.

On the present occasion, on the morning that they were seen at Cromer, the same flocks or similar ones were reported at

Cley and Blakeney—where they were flying west—by Mr. R. Pinchen.

Flocks were also viewed by Mr. F. A. Quibb at Winterton, which is on the coast, and by Mr. Caton Haigh in North Lincolnshire, where the direction of their flight was registered as north-west.

It is, therefore, quite evident that they were following the Norfolk and Lincolnshire coasts, and in all probability the sea-line of Suffolk and Yorkshire as well. One cannot but feel a great curiosity to know where bands of migrants such as these start from; probably they begin with only a few birds, and their ranks receive additions as the army goes along. That these feathered travellers eventually turn south again seems pretty obvious.

NOTES ON THE FAUNA OF THE COUNTRY OF THE CHESSE AND GADE.

By T. E. LONES, M.A., LL.D., B.Sc.

(Continued from p. 346.)

THE Rotiferan fauna of most parts of the canal, in the country of the Chess and Gade, is comparatively very poor. On many occasions samples of water, representing the results of dredgings over long lengths of the canal, have yielded very little. One reason for this is that the boat traffic being considerable, and a large number of the boats being drawn by screw steamers, the waters of the canal are often thoroughly stirred up and rendered very muddy. In such waters but few species of Rotifers would be likely to thrive. Still, several species obtained from the canal have been more than usually interesting. The finest specimen of *Rotifer vulgaris*, as already stated, was from a section of the canal between Watford and King's Langley; the best specimen, to be described later, of *Philodina citrina*, was from the canal at Boxmoor, and a few species of Rotifers, so far not obtained elsewhere in the country of the Chess and Gade, or only very sparingly, have been taken from the section of the canal between Berkhamsted and Tring Station. Not only is this true of the Rotifers, but, as far as my notes show, a corresponding statement is true also of some other forms of life, *e. g.* Entomostracans. This question of the peculiar *faunes* of the fauna of the northern section of the canal will be dealt with again when the Entomostracans of the country of the Chess and Gade are considered.

On October 15th, 1913, a sample of water obtained by dredging to the south of Tring Station appeared to contain nothing but *Anuræa cochlearis*, *Chydorus sphaericus*, and a few immature specimens of *Cyclops*. In order to facilitate examination of the various specimens some narcotizing fluid was added

to the water, and some time afterwards the greater part of it was poured off. The residue was then examined by means of the microscope, and an *Asplachna* of great transparency was noticed, but it was by no means in a suitable state for specific identification, contraction having taken place. Within it was a small Rotifer, apparently a *Brachionus*. This *Asplachna* is the only one so far obtained, and is conveniently mentioned here because it was found in the northern section of the canal, the peculiarities of the Rotiferan fauna of which are being considered. It seemed to be a specimen of Gosse's *A. brightwellii*. Beyond this it will serve no useful purpose to say anything further, but I hope to obtain specimens of *Asplachna* under conditions favourable for satisfactory identification, in which event the species so determined can be fully described. For the present three species of special interest from various parts of the canal will be described, viz. *Brachionus quadratus*, Rouss., *Dinocharis tetractis*, Ehren., and *Philodina citrina*, Ehren.

25. *Brachionus quadratus*, Rouss.—A fine specimen of this species was obtained by dredging along a distance of about one-eighth of a mile in the canal south of Tring Station on May 26th, 1914. The surface of the lorica presented a peculiar appearance; it was somewhat opaque, but, reflecting from many minute areas numerous pencils of light, the whole effect was similar to that obtained by reflecting light from a dark coloured plate of crackled or frosted glass. The length of the lorica was about $\frac{1}{100}$ in. Its six oral spines, of characteristic form and arrangement, were very conspicuous. A brilliant red eye-spot was seen situated rather far back from the oral end, and on or near the central line of the lorica. The Rotifer was very prone to anchor itself after the manner of *Noteus quadricornis*, keeping its foot and the hinder part of its body out of sight. When in this position the trapezoidal form of its lorica was well seen. Occasionally the Rotifer exposed to full view its dorsal surface, remarkable for its large size and somewhat square form. On account of its peculiar movements it was difficult to obtain a good view of the foot, which was seen, however, to be long and unusually thick and strong.

26. *Dinocharis tetractis*, Ehren.—From the water which yielded the single specimen of *B. quadratus*, just described,

were obtained seven specimens of *D. tetractis*. Their chief features were easily seen, viz. a vase-shaped faceted lorica; a very movable head which seemed as if set in a cup and moved to and fro, a movement rendered the more striking by the corresponding movement of the brilliant red eye-spot; a very long, jointed foot with two well-marked curved spurs, as shown in figs. 14 and 15; and two long toes of nearly equal width throughout. One specimen, from which figs. 14, 15 and 16 were drawn, was watched for a long time. It often remained anchored, and its toes assumed all possible positions from A to B, fig. 16, owing to the Rotifer moving slowly in the direction of the length of its lorica, while this maintained a somewhat

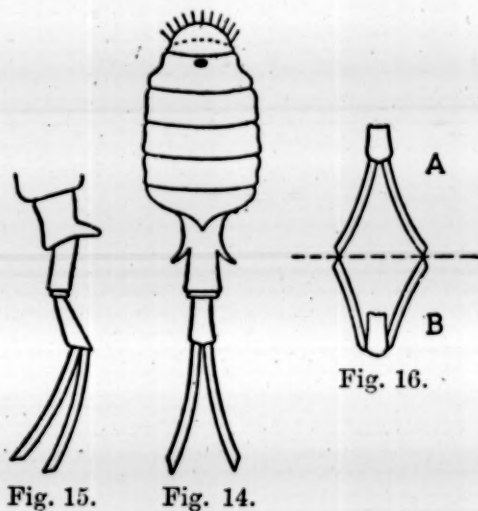


Fig. 15.

Fig. 14.

Fig. 16.

horizontal position. Occasionally the Rotifer burrowed into organic matter on the slide or swam directly forwards, and, when swimming, it often turned on its side and remained so for a few seconds. It was while the Rotifer was in this position that fig. 15 was drawn to show the peculiar bent arrangement of the foot and toes, and also the form of the spurs, of which one is shown, the other being hidden by it.

27. *Philodina citrina*, Ehren.—The bdelloid Rotifers are, generally speaking, the most difficult to examine and identify. A good procedure, I have found, is first to examine the specimens in the water of the collecting bottle containing them, not attempting to get rid of the organic or other sediment which

is usually in such water. This examination enables the movements of the Rotifers to be seen under sufficiently fair and natural conditions. Since, however, the bdelloid Rotifers will usually be burrowing in or becoming entangled with the sediment on the slide, it will be, in most cases, practically impossible to examine their anatomical features advantageously. To do this the Rotifers should next be transferred by one or more pipette operations to a little distilled or very clear water, so that finally there is no particle of sediment present. If, owing to the vigorous movements of the Rotifers, it becomes necessary to narcotize them, this should be done cautiously so as not to produce too violent a contraction. With this precaution the Rotifers often recover somewhat, especially if a little pure water is added on the slide, and finally move about sufficiently slowly to enable their anatomical features to be examined. A compressor is useful, but so far I have had no need to use it. Another point is worth mentioning. It never seems to be worth while to spend much time in examining inferior specimens of a species. Rotifers are very small animals, but, like much larger ones, they seem to present great differences in vigour and development. Some of them show to the fullest extent the peculiarities of the species,

as regards size, form and movements. The examination of such specimens with every care always repays for the time spent on them.

The Rotifer, *P. citrina*, under consideration, exemplifies some of the above remarks. Although not a common species in the country of the Chess and Gade, it is occasionally found in the pools, especially those of Chipperfield Common and Langleybury, and in the little streams near the canal, as well as the canal itself. Altogether a score or more specimens had been examined at various times, but it was not until July 14th, 1914, that an exceptionally good specimen, both as regards form and colour, was obtained. This, the only one procured on that date, was from the canal at Boxmoor. Further, there happened to be only a small quantity of sediment in the water, and examination of the Rotifer was



Fig. 17.

therefore easy. This specimen is shown in fig. 17, in a position in which it remained for a long time, with its foot embedded and partly hidden in a small quantity of sediment on the slide. The separation of the trunk from the foot was abrupt, and the nearly horizontal antenna and the well-expanded wheels were clearly seen. Two features of the Rotifer were particularly attractive, viz. its two elongated, brilliant red eye-spots, which were inclined towards each other, and the clear, bright amber colour of the greater part of its body. I do not expect to obtain a finer specimen of the species, and it seems remarkable that it was obtained from the canal, and also that the finest specimen of *Rotifer vulgaris* was obtained from the same canal, although not from the same section of it.

28. *Colurus caudatus*, Ehren.—This Rotifer was obtained, on July 21st, 1913, from the inner moat at Berkhamsted Castle. Its lorica was stout and pear-shaped, the large part being towards the hinder end, which terminated in two short points. From the anterior end of a ventral slit in the lorica proceeded a long, jointed foot, tapering to a fine extremity and carrying two thin toes. The Rotifer was almost incessantly on the move, and its movements were too complicated to allow its parts to be seen to advantage. After a time it was narcotized, and the structural features mentioned above were much better seen, while the peculiar hood of the Rotifer, appearing in side-view like a curved and strong spine, was very conspicuous.

29. *Pedetes saltator*, Gosse.—This, one of the skipping or leaping Rotifers, has usually been obtained from Chipperfield Common Pool, which is particularly rich in specimens of skipping Rotifers. The body, seen in dorsal or in ventral view, was not unlike a bag with the middle of the bottom of the bag pulled out somewhat, and with the mouth of the bag moderately drawn in or constricted. Two red eye-spots, close together, were always seen near the oral end; but the most striking features were the two leaping processes, which were much longer than the body and extended from the anterior part of its ventral surface. By the rapid movement of these processes the Rotifer was suddenly propelled across the field of view, or sometimes quite out of it; at other times it swam leisurely along, at the same time turning about its long axis.

30. *Rotifer tardus*, Ehren.—This Rotifer is easily identified. The swollen segments of its body, its ungainly shape, rendered dirty-looking by mud and other foreign matter adhering to its sticky surface, and its clumsy movements are alone almost sufficient to distinguish it from other bdelloids. So far, specimens have been found in Chipperfield Common Pool and in moss from Shire Lane, near Hastoe. On September 15th, 1913, a specimen was obtained from Chipperfield Common Pool by dredging at the bottom near the end of the plank walk. This specimen was so thickly covered with foreign matter that the longitudinal ribbing, which is a marked feature of the species, was not at all clearly seen; on the other hand, its dorsal antenna, its thick foot passing into its body without any sign of an abrupt juncture, and its rather stout and long rostrum were conspicuous. On this rostrum were the eye-spots; at first sight these seemed to be elongated single spots, but closer examination showed that each consisted of two separate spots. On October 16th, 1913, a specimen of *R. tardus* was obtained from the damp and luxuriant growth of moss in the ditch on the Bucks side of Shire Lane, near Hastoe. The more central parts of the specimen were brown and the extremities colourless; and, although there was a quantity of foreign matter on its sticky surface, its longitudinal ribbing was well shown. The eye-spots were not so well seen as those of the specimen from Chipperfield Common Pool, nor did they seem to be made up of separate small ones.

Except when these specimens of *R. tardus* expanded their wheels and frontal column and swam about, their movements were quite sluggish and clumsy.

31. *Rhinops vitrea*, Hudson.—This is another Rotifer of ungainly form. Several specimens of the species were obtained from Bedmond Pool on April 11th, 1914, and from Hastoe Pool on May 26th, 1914. When seen in dorsal or in ventral view, they presented a symmetrical form, with the dorsal proboscis widening out into the "shoulders" of the Rotifer, and the rest of the animal narrowing gradually and passing without an apparent break into the short conical and flabby foot which, as well as the peripheral parts of the body of the Rotifer, was of hyaline transparency. The foot, indistinctly jointed, carried

two small toes, which were never seen separated. When seen in side view, the Rotifer was very unsymmetrical, mainly because of the dorsal position of the forwardly extending proboscis. Two bright red eye-spots near the end of the proboscis were very conspicuous objects.

The movements of these Rotifers were usually clumsy. Sometimes they swam forwards moderately quickly, occasionally turning and doubling, but more frequently they remained anchored to the slide, at the same time twisting and turning into all kinds of irregular forms. This was especially noticeable when the lateral parts of the corona—called above “the shoulders”—were drawn towards each other, a movement considered to be due to the efforts of the Rotifer to swallow an unusually large food particle.

32. *Diglena biraphis*, Gosse.—On September 18th, 1913, a few specimens of this Rotifer were taken from Parsonage Farm Pool, Abbot's Langley. The water in the pool was low, and had a pungent smell due to the presence of a large quantity of decomposing vegetable matter. The Rotifers had an elongated body, somewhat spindle-shaped in dorsal view, and a retractile oral part with two eye-spots close together and near the oral end. During examination of the water of the sample bottles under the microscope, they were the first forms of life to attract attention, on account of the large amount of green food-material filling the exceptionally large alimentary canal. The oral parts of the Rotifers were repeatedly protruded and retracted, but during these movements I did not obtain a clear view of the curved pincers of the mastax. The foot was short, stout, and quite flexible, but was never seen more than partially retracted; it carried two long toes of nearly equal width throughout, which were often seen crossed over each other. Their movements were of a simple kind, and usually consisted in swimming forwards. The total length of the Rotifers was about $\frac{1}{100}$ -in. Two specimens of the same species were obtained from Hastoe Pool on May 26th, 1914. They were found in the muddy sediment which remained after the clear water had been poured from the collecting bottle. These specimens swam forwards rather slowly, but were not seen to cross their toes; in other respects, they behaved exactly like the specimens from Abbot's Langley.

33. *Mastigocerca bicornis*, Ehren.—Three specimens of this elegant Rattulid were obtained from Chesham Road Pool on May 26th, 1914. Their oral spines, from which the specific name is derived, were very conspicuous—one a long, curved, and strong spine, and the other close to it and short. In form, the body was a long, truncated ellipsoid, for the most part of a uniform light brown, presenting a pretty contrast to the ruby-red eye-spot near the oral end. The toe, about two-thirds as long as the body, including the long oral spine, was curved slightly, and, like the toes of Rattulids generally, was like a needle or awl. The total length of one of the specimens was $\frac{1}{50}$ -in. Occasionally, they burrowed through the vegetable matter on the slide, but at other times their movements were graceful, swimming forwards slowly and turning over and swaying their toes quite leisurely.

34. *Floscularia campanulata*, Dobie.—Among the very large number of specimens of Rotifers so far obtained in the country of the Chess and Gade, a few have belonged to the Rhizota. Among these have been some Floscularias from the inner moat at Berkhamsted Castle. On many occasions I have examined collections of water-plants from several localities for the purpose of finding specimens of these beautiful Rotifers, but have been successful on only a few occasions. On July 14th, 1914, a fine specimen of *F. campanulata* was obtained from the aforesaid moat. When expanded, its five broad lobes, one of which was larger than the rest, bearing at and along their curved tips radiating bundles of long setæ, were easily seen, one, two, or more of the lobes being fairly in focus at various times. A single, oval egg of dark colour was close to the upper end of the stem, which was surrounded by the usual hyaline casing, rendered visible by small specks of matter adhering to its outer surface. The cup of the Floscule was a fairly regular bell-shaped body, the middle and lower parts of which were of a light brown colour. By varying the illumination, an eye-spot of bright-red colour was seen in the cervical region of the Rotifer. The length of the Rotifer, when extended, was $\frac{1}{35}$ -inch.

35. *Floscularia coronetta*, Cubitt.—On September 30th, 1913, a small Floscule of this species was obtained from the inner moat. It was attached to an angulated part of a leaf of duck-

weed. When disturbed it withdrew itself into its casing, and presented a compact rounded body, the end of which was truncated, the setæ having been neatly gathered together into a compact brush projecting from the centre of the truncated surface. Very soon afterwards the body would slowly expand itself, the pedicel being at the same time straightened, and the brush of setæ would open out into series of tufts projecting from the knobbed ends of the five thin lobes of the corona. These knobbed ends were turned slightly outwards, and the whole corona presented a striking resemblance to a little crown, fully justifying its scientific name. When fully expanded in this way, the Rotifer was a beautiful microscopic object, its beauty being enhanced by the bright contrast of colours, green and yellow, of parts of its body, while all other parts were clear and colourless.

36. *Stephanops lamellaris*, Ehren.—This remarkable Rotifer has been found in Chesham Road Pool and the inner moat of Berkhamsted Castle. On September 30th, 1913, when, like many other pools in the district, Chesham Road Pool was very low, a few specimens were obtained. One of these is represented in fig. 18. The specimens from the moat were numerous, and were taken near the outlet at its south-eastern corner on July 14th, 1914.



Fig. 18.

These Rotifers often moved about among the small quantity of starwort and duckweed on the slide, and only occasionally swam freely; at other times they anchored themselves to the slide, when they twisted and turned in a manner quite ungainly, showing the dorsal spines on the lorica, and the spine on the last joint of the foot. The most striking feature, however, was the conoidal head fringed by cilia and surmounted by a beautiful halo-like shield. The two bright red eye-spots, although quite small, were clearly seen, one in each corner of the base of the conoidal head. During the varied movements of the Rotifers the neck was seen to be quite flexible, and the foot was not only flexible but seemed to be of a flabby nature.

37. *Euchlanis triquetra*, Ehren.—Four specimens of this

Rotifer were obtained from Chesham Road Pool on May 26th, 1914. They were very prone to burrow amongst the organic and other matter on the slide, but often swam about energetically and turned into all possible positions so as to show the peculiar form of the lorica. This was somewhat oval in dorsal or in ventral view, with a notch at the anterior and another at the posterior end. From this notch extended a jointed foot having a wavy outline and carrying two blade-like toes. The two setæ of the foot were not seen. In end view the lorica was not unlike a beech nut, and, as the illumination was varied, the "wings" of the lorica and its upstanding dorsal ridge or plate were seen to be brilliantly transparent and clear.

38. *Proales parasita*, Ehren.—This Rotifer is particularly interesting because it is usually found within *Volvox globator*, the well-known alga, which is one of the most beautiful microscopic objects known. Compared with its host, the Rotifer is a dull and unattractive form of life. It is very readily detected within the particular specimen of *Volvox* in which it happens to reside, its slightly bent cylindrical body of a dull coloration, usually relieved only by a little green patch of food material and a bright red eye-spot, being in marked contrast to the almost perfect geometrical symmetry and the brilliant colouring of its host.

On only two occasions have I succeeded in finding specimens of *P. parasita* in the country of the Chess and Gade, although a very large number of specimens of *Volvox* have been examined from numerous localities, especially the pools of Bedmond, Berkhamsted Common, Chesham Road, Cholesbury Common, and Hastoe.

The largest number of specimens of *Volvox* so far seen was in water from Bedmond Pool on July 14th, 1914. They were apparently all dead; in fact, excepting a small Cypris, nothing was found alive in the water, which had a decidedly sickly and unpleasant smell. Usually the water in Bedmond Pool is clear and fairly fresh, but on this occasion there was a quantity of oily and evil-smelling material on the lee side of the pool. Many of the specimens of *Volox*, and there must have been at least a hundred in every cubic millimetre of water, were examined, but not a single specimen of *P. parasita* was detected.

Another occasion on which a large number of specimens of Volvox was examined was on October 3rd, 1913, in water from a small weedy pool near the southern end of Berkhamsted Common, and close to a part of the golf course. Here, also, almost all forms of life were apparently dead; the water was of a purplish colour, and, after inquiry, it seemed probable that worm-killing fluid used on the course had found its way into the pool. However, in one of the specimens of Volvox a *P. parasita* was found. It was alive, but by no means lively, and when set free, by rupturing the Volvox, did no more than extend and contract itself by turns, the anterior parts of its body being decidedly wrinkled at each contraction. On May 26th, 1914, an especially fine specimen of Volvox from Chesham Road Pool was found to contain a specimen of *P. parasita*. Strange to say, the contained Rotifer was sluggish and the Volvox was quite motionless. A few large and vigorous specimens of Volvox have been found occasionally in the collecting bottles from other localities in the district, but no specimen of *P. parasita* was detected.

(To be continued.)

NOTES AND QUERIES.

A V E S.

Grey Wagtail breeding in Sussex.—An instance of this came under my notice a short time ago from an unexpected source. Some "Bird and Tree Essays," written for the Society for the Protection of Birds, passed into my hands, one of which was on "The Wagtail." This was the work of a village school-girl in Sussex, whose home is near the west bank of the River Arun. Her description of the Grey Wagtail and also of its nest, which she found last spring with five eggs, was so accurate that there could be no doubt as to the species.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds, Suffolk).

Hooded Crow in Bedfordshire: Effects of the War on Bird Life.—Although the Hooded Crow (*Corvus cornix*) is a fairly common winter visitant to Bedfordshire, it is seldom seen other than solitary or a pair together and scattered more or less generally over the county. During the present autumn immigration they have certainly been far more abundant than usual, and in one instance, on Nov. 8th, I counted no fewer than thirty together on the Sewage Farm at Newnham. Such occurrences may possibly be attributable to the abnormal conditions on the Continent, and it would be of interest to place on record any such observations on bird life from other localities.—J. STEELE ELLIOTT (Dowles Manor, Salop).

Courtship Habits of the Great Crested Grebe (*Podiceps cristatus*).—In his interesting paper on "The Courtship Habits of the Great Crested Grebe" which appeared in the last September issue of the Zoological Society's 'Proceedings,' Professor Julian S. Huxley gives an abstract of my own observations, published in the 'Zoologist,' on the pairing and nesting habits of this species. On this, various comments suggest themselves to me, but perhaps you can allow me space for the following, viz.:—

(1) "Selous observed numerous *bouts of shaking*, which he refers to in various ways, &c." (p. 532). I cannot quite endorse this. It would appear that I never saw "shaking bouts" in the sense that

this feature was sufficiently marked to suggest the word to me. I however mention the birds touching each other's bills. "Nebbing" and "billing" are the two English words; but, not liking either of them, I inadvisedly used a French one, thinking it expressed a little more than our "touch." At the least, therefore, this action must have appeared the most important one to me—the central act, so to speak—and adds (I think) another to those recorded in the paper in question. But if this be so, the question arises as to what is its value in the philosophy of the whole—of the shaking bout, that is to say, whether accompanied by this action or not. May it not, as being far more widely extended amongst birds than this very specialised form of nuptial enjoyment, have been the root feature, out of which the latter grew, and at last became overgrown? If so, the case, I think, does not want parallels. The fact that, when I witnessed the equivalent (in this I am inclined to agree with Professor Huxley) of these shaking bouts, it was later in the season, and the birds were satisfying their sexual instincts, through a fuller channel, may have tended to reduce them to something more like what they originally were, before they became thus exaggerated. The question involved is whether the singularities of the courtship habits of the Great Crested Grebe may not be due to various subsidiary causes, not essentially or unmixedly belonging to sexual selection, or else have been evolved *pari passu* with the more ordinary manifestations of this principle, or through a combination of these two factors, in which case they need not represent any essential addition to such a course of procedure as, in many birds, during the love season, seems exactly in accordance with the requirements of the Darwinian theory.* It may, I think, be asked whether "mutual" or "double selection," as between the sexes, constitutes such an addition. Darwin considered the likelihood of this principle obtaining in Nature, and though he concluded against it, yet he evidently regarded it as comprised potentially in his views. His opinion, however, was based rather upon general considerations than actual evidence, of which there was little or none at the time. During a visit to the Shetlands, in 1900, I came to the conclusion that there was some amount of reciprocation, in display and choice amongst birds, and in a chapter of the book† in which

* I have recorded very salient examples of this, in the case of the Red-shank, Ruff, and Blackcock, in 'Zoologist,' 1906, pp. 201, 285, and 419; 1907, pp. 60, 161, and 867; 1909, p. 401; 1910, pp. 33, 51, 176, and 248.

† 'The Bird Watcher in the Shetlands.'

my observations to this effect were recorded, headed "Intersexual Selection" (which perhaps is not a good term), I discuss the evidence for this. I did indeed, in the case of the Fulmar Petrel, see something a good deal resembling these shaking bouts of the Grebes, but the development of the habit along æsthetic lines was more than suggested by the way in which the pair opened their bills at each other, thereby displaying a handsomely coloured buccal cavity—which it was equally open to them to conceal. Yet the shaking (or swaying) seemed to be enjoyed for its own sake. Since the Grebes have their crests, as well as the habit of "nebbing," this part of the ceremony may, in either case, represent a bye-product.

(2) "The hen took hold of the dangling end of the weed, which the cock was carrying, and then they 'chasséd, with little waddling steps' from side to side. I think Selous is mistaken; such an action as he describes would be impossible on open water" (p. 532). This is not quite exactly what I say, though my use of the word *chassé* lends itself, almost unavoidably, to such a recollection of my meaning. But the "little waddling steps" were "now forwards, now backwards, but not going more than a few inches either way," and then I continue, "I would say that they *chasséd*—for it had that effect—but the motion was as described, and not from side to side" (Zool., 1901, p. 344). My subsequent observations on the Red-throated Diver (a heavier bird) prove that there is no impossibility in such an action as this on water absolutely open. Consequently there is no reason why I should have been mistaken, and the vivid mental picture which I retain of the birds thus moving will not allow me to think that I was.

(3) "More light is needed on the habit" (of sexual sporting with weed). "It is perhaps connected with the arranging of the weeds on the nest by both birds together" (p. 533). My observations go to show that there is an association of ideas in the minds of various species of birds between the *mandibulation* of materials composing, or proper to compose, the nest, and coition on the nest. The long holding up of an article of mine keeps back some of my most striking evidence in this direction, but I may refer to the last instalment of my Icelandic diary (Zool., 1914, p. 213), to "Wild Life," April, 1914 (p. 212), and also, for examples of such association, in the case of the Great Crested Grebe itself, when the bird is on the nest, and mandibulates the materials of which it is composed, to Zool., 1901 (pp. 342-344).

(4) "The cock of course uses his special platform to rest on, so it

is possible that the pairing-platform is used by the hen as a corresponding resting-place" (p. 538, par. 3). This assumes two special structures besides the nest, but, from my own observations, I cannot yet admit even one, built with a consciousness of its being such. Briefly, the evidence is not yet sufficient to allow us to say with certainty that these platforms are not, by the bird's first intention, nests, either begun and then abandoned, or imperfectly made. Their being put to a subsequent use, along the line of the birds' habits, would not, in itself, prove that they were specially made for this purpose alone. Were it proved, however, as it may be on further evidence, I may point out that "aberrant nests" (as, in their origin, Professor Huxley, like myself, would consider them), now become resting or pairing platforms, very much favour my suggestion as to the possible origin of the so-called "bower," "run," "garden," &c., of the "Bower Birds" (Zool., 1901, pp. 177, 178); "Bird Life Glimpses" (pp. 60-67).—EDMUND SELOUS.

NOTICES OF NEW BOOKS.

Some South Indian Insects and other Animals of Importance Considered especially from an Economic Point of View. By T. BAINBRIGGE FLETCHER, R.N., &c. Government Press, Madras.

IN our last issue we called attention to a massive publication on "Indian Forest Insects" by Mr. Stebbing; we have now received the above equally large and handsome volume on a similar subject. The introductory chapters deal with general entomological topics, those on "Means of Defence in Insects" and "Communication amongst Insects" being based on facts and very suggestive, while the author concludes "that the majority of even the most complex of the actions of insects are regulated by instinct, and that cases of reasoning are very rare and confined solely to the most highly-organized of the social insects." The subject of "Control of Insect Pests of Crops" is very exhaustively treated, and agriculturists in Britain may find many hints by studying the processes as used in India. Referring to the well-known Dynastid Beetle, *Oryctes rhinoceros*, Mr. Fletcher reports that it "occasionally bores into sugar-cane stems." It is satisfactory to hear this qualified accusation in S. India; the beetle used to be more destructive some forty-five years ago in the cane-fields of the Malay Peninsula, where a few Malays were employed to search for and cut out the injured canes with their coleopteral enemies. In the Rhynchota many of the smaller species have lately been found to be widely distributed, owing probably to the artificial dispersion of plants. Thus *Pundaluoya simplicia*, Dist., originally described from Ceylon, and here recorded by Mr. Fletcher as found throughout the plains of Southern India, has now also been received from S. Nigeria and the Hawaiian and Seychelles Islands, and probably, despite mistaken identification, from Fiji, Java, and Australia.

This book is excellently illustrated, and will be found indispensable to all students of Indian economic entomology.

The Indian Museum, 1814-1914. Trustees of the Indian Museum, Calcutta.

WE are told in the Preface that this volume has been prepared in commemoration of the hundredth anniversary of the foundation of the Asiatic Society's Museum, which subsequently developed into the Indian Museum as it now exists. Sir William Jones founded the Asiatic Society in 1784, but it was not till 1814 that the project of a Museum was actually or efficiently made to be under the Honorary Curatorship of Dr. Wallich. In 1856 a memorial was submitted to the Government of India for the establishment of an Imperial Museum, and in 1862 the proposal was actually taken into consideration with regard to its practical realization, and it was in 1875 that the Museum building, one of the largest in Calcutta, became ready for occupation. In its early days it was organized by Dr. Anderson, assisted by Mr. Wood-Mason, and since then under successive able superintendents it has become the recognized Museum of the Orient.

Some of the most valuable zoological collections have been made by the biological workers of the Marine Survey of India, and the name of the R.I.M.S.S. 'Investigator' has become to biologists as well-known in Indian seas as that of the 'Challenger' over a much wider area. The institution has grown and is still growing, its publications are standard and well-known, while it now publishes more or less regularly its own 'Memoirs' and 'Records.' Of the valuable collections we have not the space to adequately refer to. There is, however, one effort which we think a matter for question, and that is the preservation of "types," of which so much has recently been heard. When these are of a delicate and perishable nature, an Indian climate is not their best environment, and they, when other representatives are obtained, would perhaps be safer and more durable in our British Museum.

EDITORIAL GLEANINGS.

"TAXONOMY AND EVOLUTION."—Under this title ('American Naturalist,' xlviii., p. 369) an anonymous writer "X" has lately been repeating some truisms as to the method of classifying animals for museum purposes and for reference in bionomical, distributional and even in evolutionary literature. The argument seems somewhat Laboratory *v.* Museum. We quote the following paragraphs:—

"Linnaeus bestowing Latin names upon animals and plants was simply tripping gaily across the back of a half-submerged Behemoth and mistaking it for dry land. Now the beast is careering around, and in spite of zoological congresses and international rules nobody quite knows what to do with him. No doubt when some zoological czar arises and issues his fiat a uniform system of nomenclature will be adopted and things will begin to straighten themselves out. This can only be a matter of time—the past cannot be altered. On systematists to-day necessarily devolves the dull, difficult and important duty of going through the descriptive work of the early naturalists and emending it; so that Spallanzani's derisive sobriquet of 'nomenclature naturalists' was a little unjust, even in his time.

"We assume that the principal object of systematic work is to discover the *phylogenetic classification* of animals, for which it is surely necessary that every animal as it passes through the systematist's hands should be, as far as possible, thoroughly examined and described, no dependence being placed upon a few superficial characters usually selected from the external parts? That the systematist should concern himself, as he does, with the external parts, leaving the anatomy to other workers, we consider is as bad for the systematist himself as it is bad for the science; for himself, he is doing work which can only keep his soul alive with difficulty—superficial clerical work which can be 'prompted by no real curiosity and attempts to answer no scientific questions,' and the results of the work itself is often invalidated by the arrival of the destroying angel in the person of the anatomist. For a superficial description often means a wrong classification; whence it follows that any zoogeographical deductions therefrom are invalidated; while a careless description usually ignores the possibilities of variation and shows no evidence of pains having been taken to make identification easy.

"Systematic work, then, is concerned with classification, geographical distribution, variation and identification, and there would be no need for this paper, if it were more generally realized that one thorough examination and description of the whole animal assists those branches of the inquiry more than twenty loose and superficial ones.

"On the other hand, the minor systems—the families, genera and species—the realm of the 'systematist'—too frequently consist of haphazard combination of a few characters selected because of their convenience in not entailing any anatomical work, or selected on account of the ignorance existing of any other—particularly internal—important characters. Ignorance of their morphology has been the main reason for the difficulty in classifying the Coleoptera. Entomologists are especially prone to give their whole attention to what is visible without the aid of dissection. In the Polyzoa the majority of forms are only known by their external appearance and their classification is proportionally unsatisfactory. In the Mollusca reliance is placed on the shell; in mammals the skull and the skin, in birds the plumage, are the articles of faith.

"Single character classification, or diagnosis by one or two characters, as zoological history shows, has proved inadequate—that it is unphilosophical is patent to all.

"Such single character classification even when practised by the great morphologists—men who, being acquainted with the whole of the anatomy of the forms they were classifying, deliberately selected one or two characters after a survey of the whole—was rarely a success. Huxley set out unabashed to classify birds by their palate, and Agassiz fish by their scales—systems which have now shared the fate of most others which set out to erect a classification on the modifications of a single organ alone. Alfred Newton said that there was no part of a bird's organization that by a proper study would not help to settle the great question of its affinities.

"The systematist who deals with the minor subdivisions of the animal kingdom—families and genera—should be as much a morphologist as the one who deals with the larger—the phyla and classes.

"The descriptive papers on Mollusca usually consist of short descriptions of the shells, even written in a dead language. This is conchology. Conchologists confine themselves to the patterns and shapes of shells—Nature's medallions—numismatics! Much of this work—along with similar productions in entomology and carcinology—we regard as positively flagitious.

"The advent of the morphologist into the particular sphere of systematics or the metamorphosis of the systematist into a morphologist (it matters not how we put this desirable event) will result in the annexation not only of classification, but also of questions of geographical distribution, by anatomy and morphology. How many pretty theories in geographical distribution have collapsed because they were built on the sands of an incorrect classification? The similarity between the faunas of South America and Madagascar is supported by many facts, but the value of *Solenodon* in Cuba and *Centetes* in Madagascar has been lessened by the recognition that the two genera resemble each other by convergence, and should now be classified in different families.

"The Dendrobatinae also are considered by Dr. Gadow as an unnatural group, the two divisions—South American and Mascarene—having, according to him, lost their teeth independently. Again, Dr. Gadow refers to the Ratitae as a heterogeneous assemblage of birds which is 'absolutely worthless' for the zoogeographer. There are scores of such artificial groupings—the work of the systematist—which have led zoogeographers astray.

"The result is that systematic work as at present pursued is of very little use to us in the study of geographical distribution. It is hopeless nowadays for a zoologist to sit down with a list of species and their range and trusting implicitly in systematic work to make maps of distribution and, as he so often does, to draw deductions therefrom, for the validity of such deductions must ultimately depend upon the anatomical and morphological data. Moreover, the study of geographical distribution is developing new methods of tackling its problems.

"We do not consider it necessary to touch on the other remedies that might be applied with a view to redeeming zoological taxonomy from its present artificial state and to bringing it into line with the rest of biology.

"Such remedies—for instance, testing the validity of species by genetic experiment and the intensive study of variation—have been advocated many times before, although with little success. We believe, however, that the reforms in descriptive zoology we have advocated above are the more urgent."

Most zoologists will agree with the general drift of these criticisms, but we now await, with much interest, the publication of some faunistic paper by "X," showing us how the work should be done.

MR. J. DRUMMOND, in his weekly contributions, "In touch with Nature," appearing in the 'Lyttelton Times,' has recently written on the New Zealand Merganser (*Mergus australis*), from which the following extracts are taken:—

"Very little is known of the New Zealand Merganser, and those who go down to the Auckland Islands, where this bird lives, would do good service to the Dominion by observing and recording its habits. It is seldom seen in the coastal and open waters around the Auckland Islands, but spends most of its time in the sheltered harbours and the streams and creeks where it obtains its food.

"The southern Merganser has been protected for many years, but even when it might be killed with impunity few specimens found their way into public or private bird collections. The first specimen was taken to Europe by the naturalists on Dumont D'Urville's Antarctic Expedition, which touched at the Auckland Islands nearly seventy-five years ago. The skin they brought back was placed in the Museum of Paris and for many years was the only one known. About thirty years ago Baron Von Hugel bought a pair of skins in Invercargill from a man who had returned from a surveying trip to the Auckland Islands. When the Earl of Ranfurly visited the islands in 1904, he obtained several very beautiful specimens, which now are in the British Museum. There are specimens in the Otago, Canterbury, and Wellington Museums. The Hon. W. Rothschild has three in his famous museum at Tring, England, there is one specimen in the University Museum at Cambridge, and there are two in the Imperial Museum at Vienna.

"Recent reports show that the bird now is rare even in places it delights to haunt. It is some time since news was received of a living specimen having been seen. The Flightless Duck (*Nesonetta aucklandica*) of the Auckland Islands, on the other hand, seems still to be fairly plentiful. This is a true Duck, but its wings are so short that it can fly only a very short distance. There was a belief for many years that it was absolutely flightless, but Captain Bollons, of the 'Tukanekai,' who has had many opportunities of observing these Ducks, states that they can fly to their nests, which are made in holes. These holes, sometimes, are in the face of a cliff, often between fifteen and twenty feet above sea-level. He has seen the Ducks rise from the ground at the foot of a cliff, and, with the use of their wings, go into the holes, a performance which an absolutely flightless bird could not attempt. He has tried to reach the nests with a ladder, but has been unsuccessful. To compensate for the

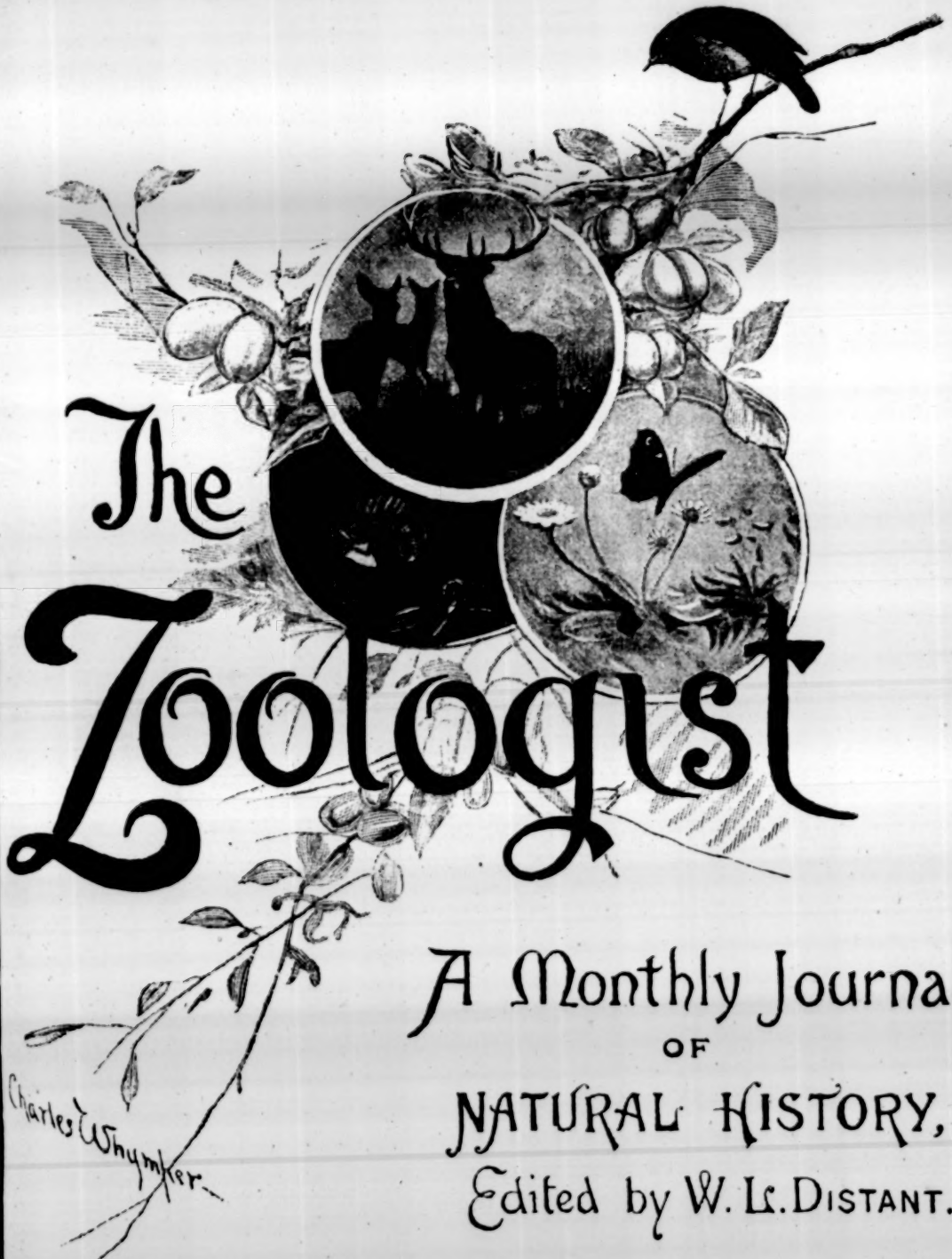
partial loss of flight, the Auckland Islands Duck has learned to climb very skilfully. Captive specimens in Sir Walter Buller's possession never tried to use their wings, although they had ample opportunity to do so. A male regularly climbed back and forth over a netting wall, going out in the morning and returning to its mate inside the enclosure in the evening.

"Men never regarded the bleak, wind-swept Auckland Islands as a very suitable place of abode. The southern Merganser, consequently, has been given no place in folk-lore, legend, or fairy tale, and, unlike its congener of the Far North, the Goosander, has not entered into the lives of human beings."

'AUSTRALIAN ZOOLOGIST.'—We are informed in the last number of 'The Emu' that the first part of the first volume of 'The Australian Zoologist' has appeared. It is issued by the Royal Zoological Society of New South Wales, and edited by Allan R. M'Culloch, Zoologist, Australian Museum, Sydney.

AVICULTURE IN BORNEO AND JAVA.—Mynahs (*Eulabes javanensis*) are often kept as pets by natives, and in a Sultan's palace in Java, at Djocjakarta, I saw several kept in cages, and his wives apparently took great interest in them; some had been taught to speak and whistle.—B. B. WILLIAMS, 'The Sarawak Museum Journal,' II., p. 97.





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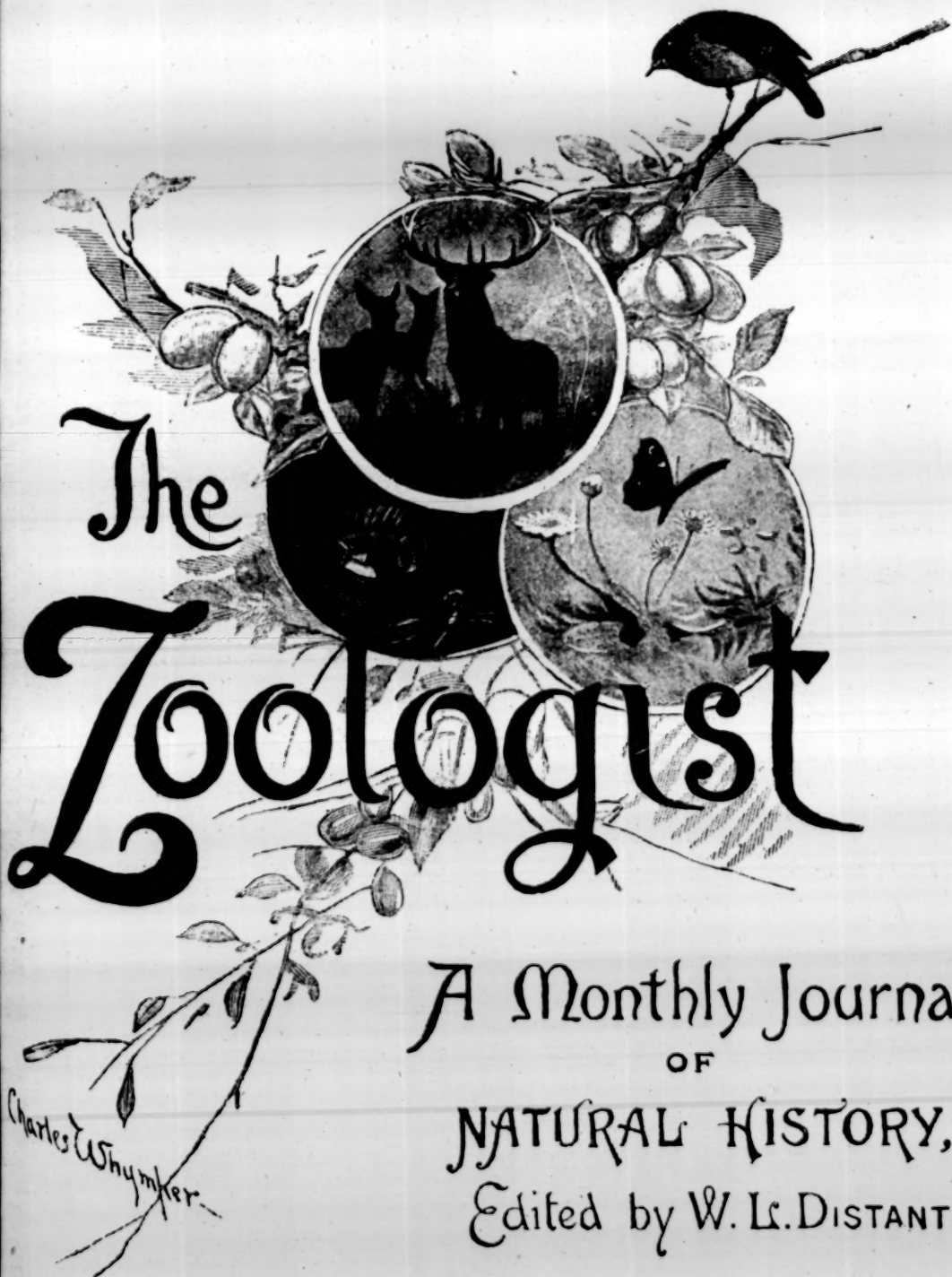
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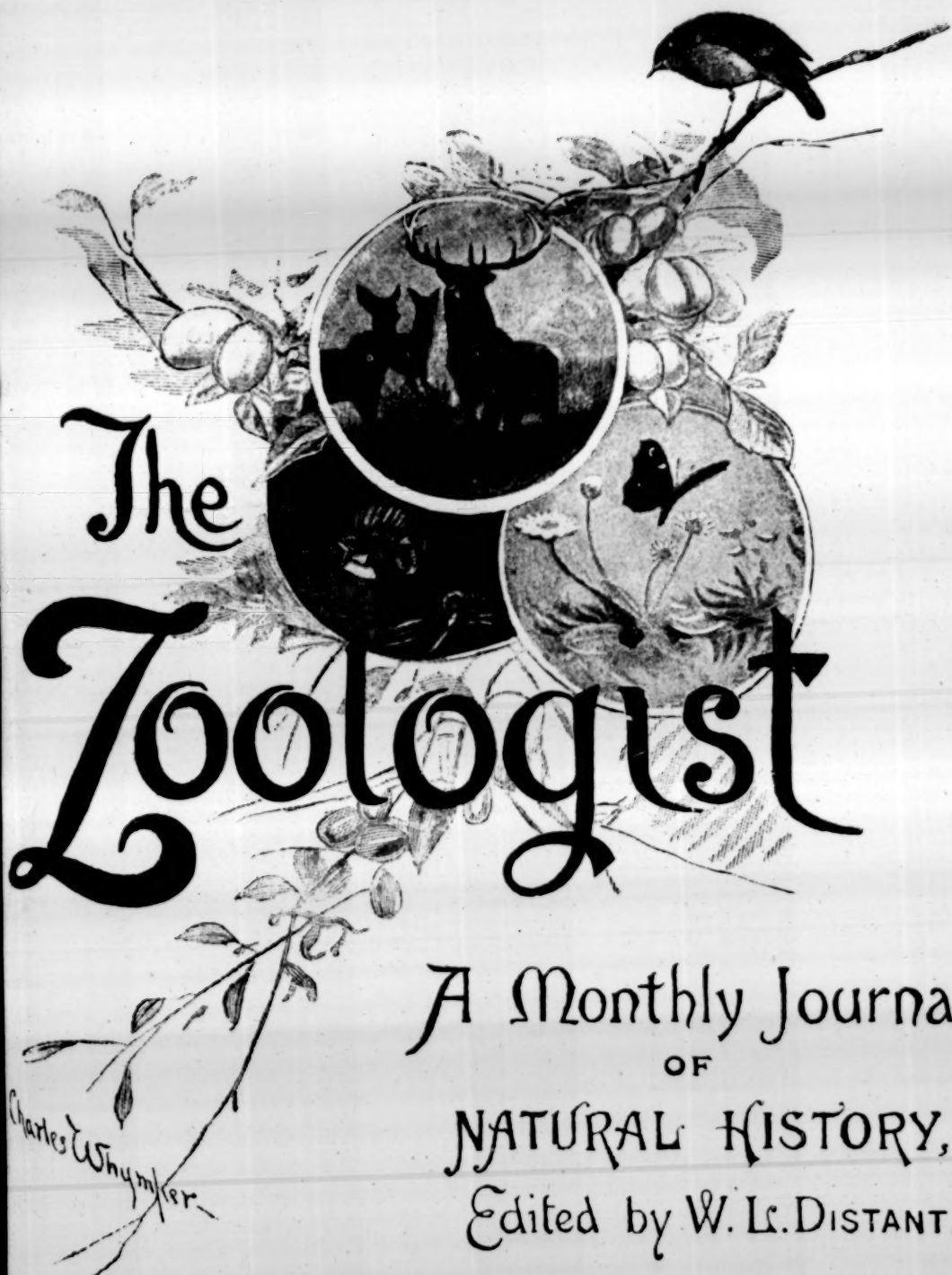
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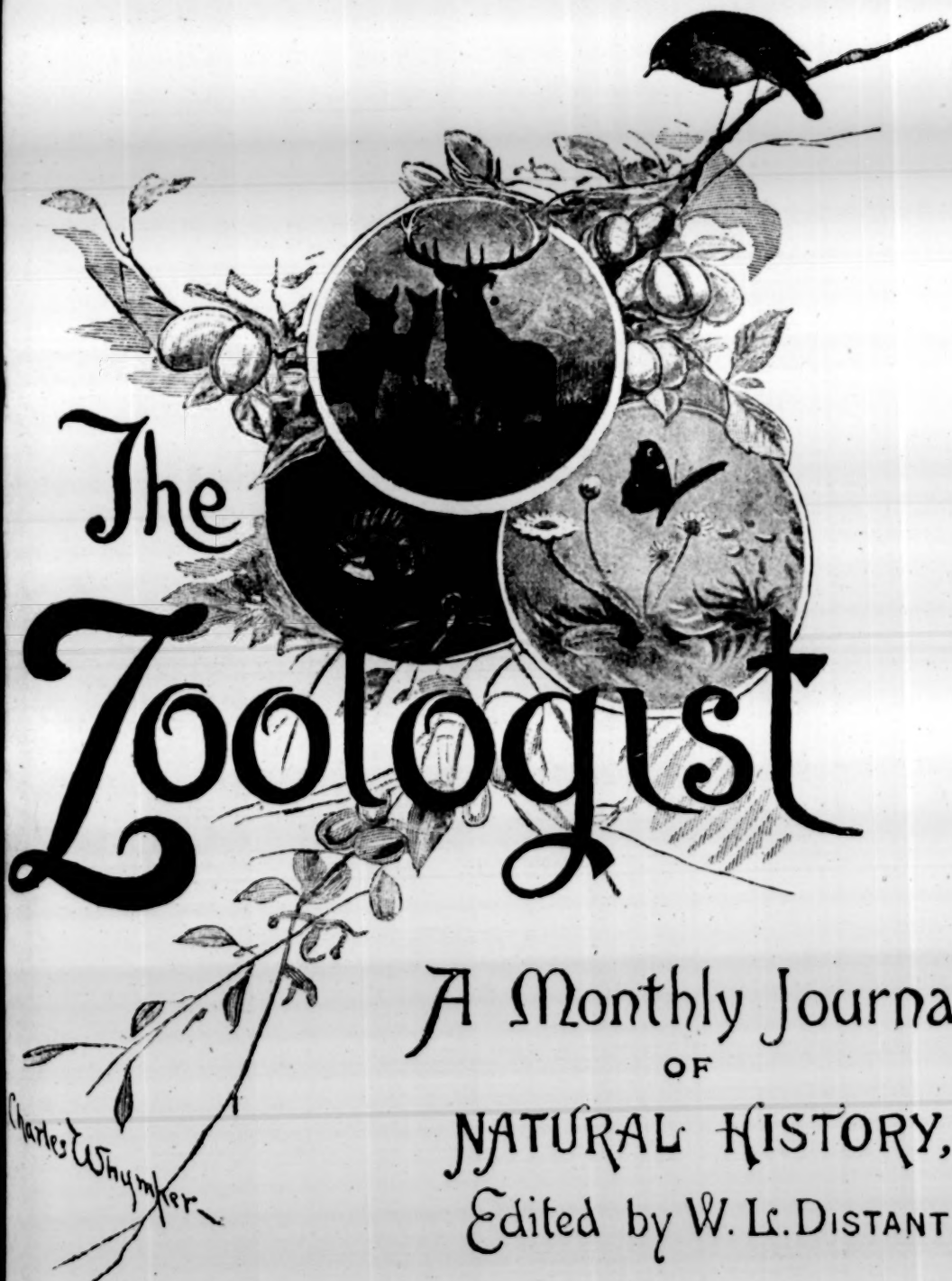
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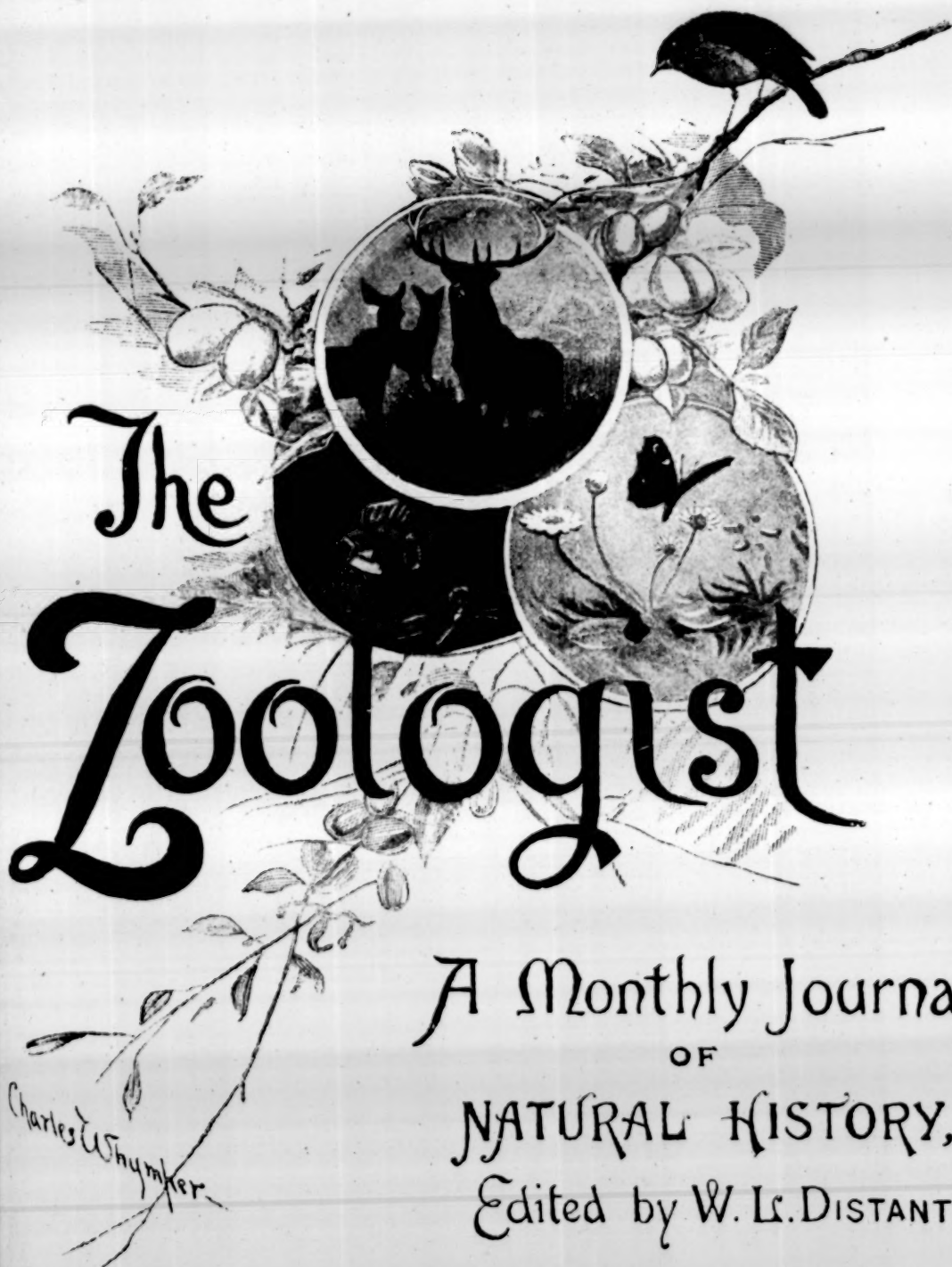
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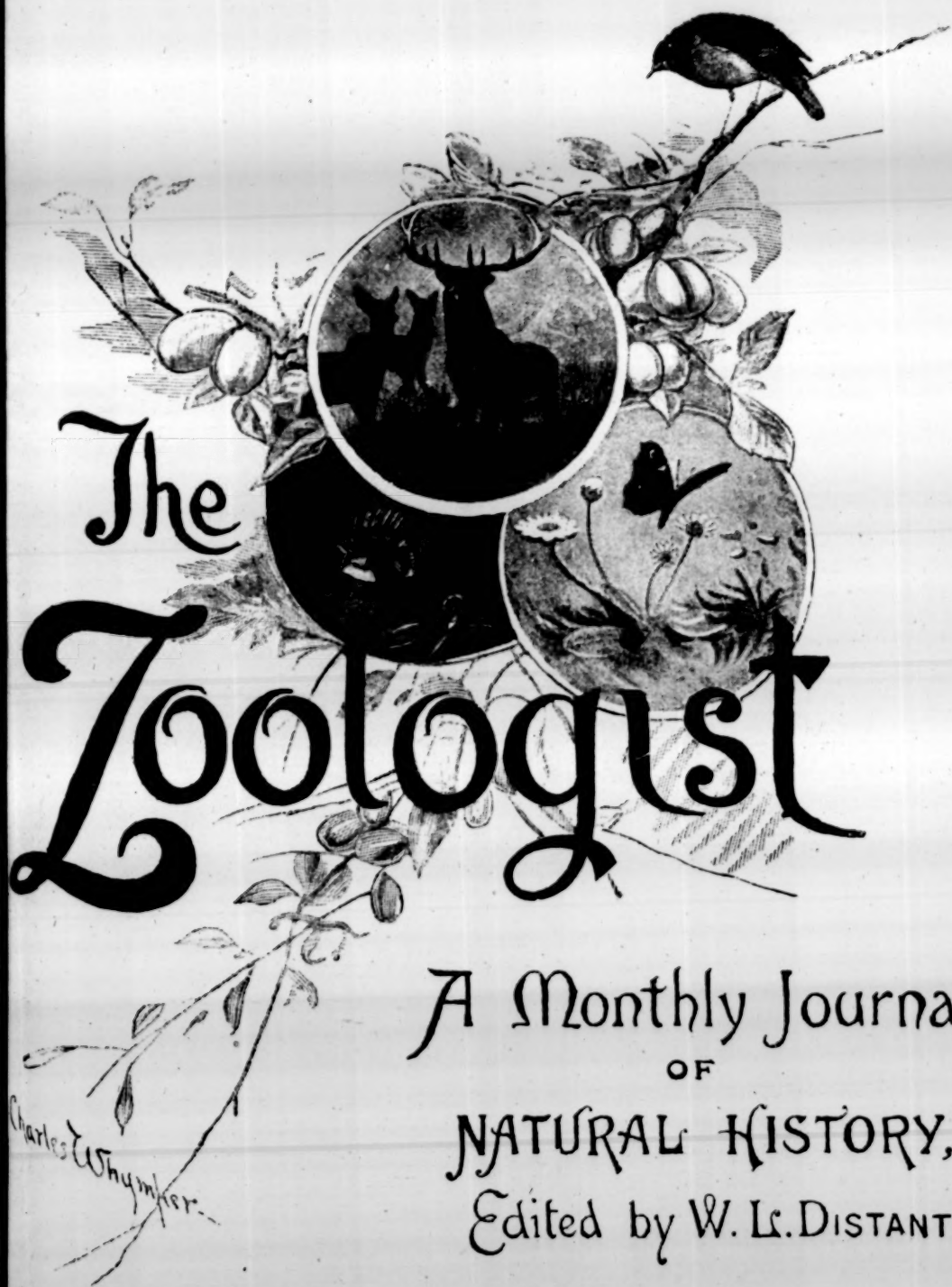
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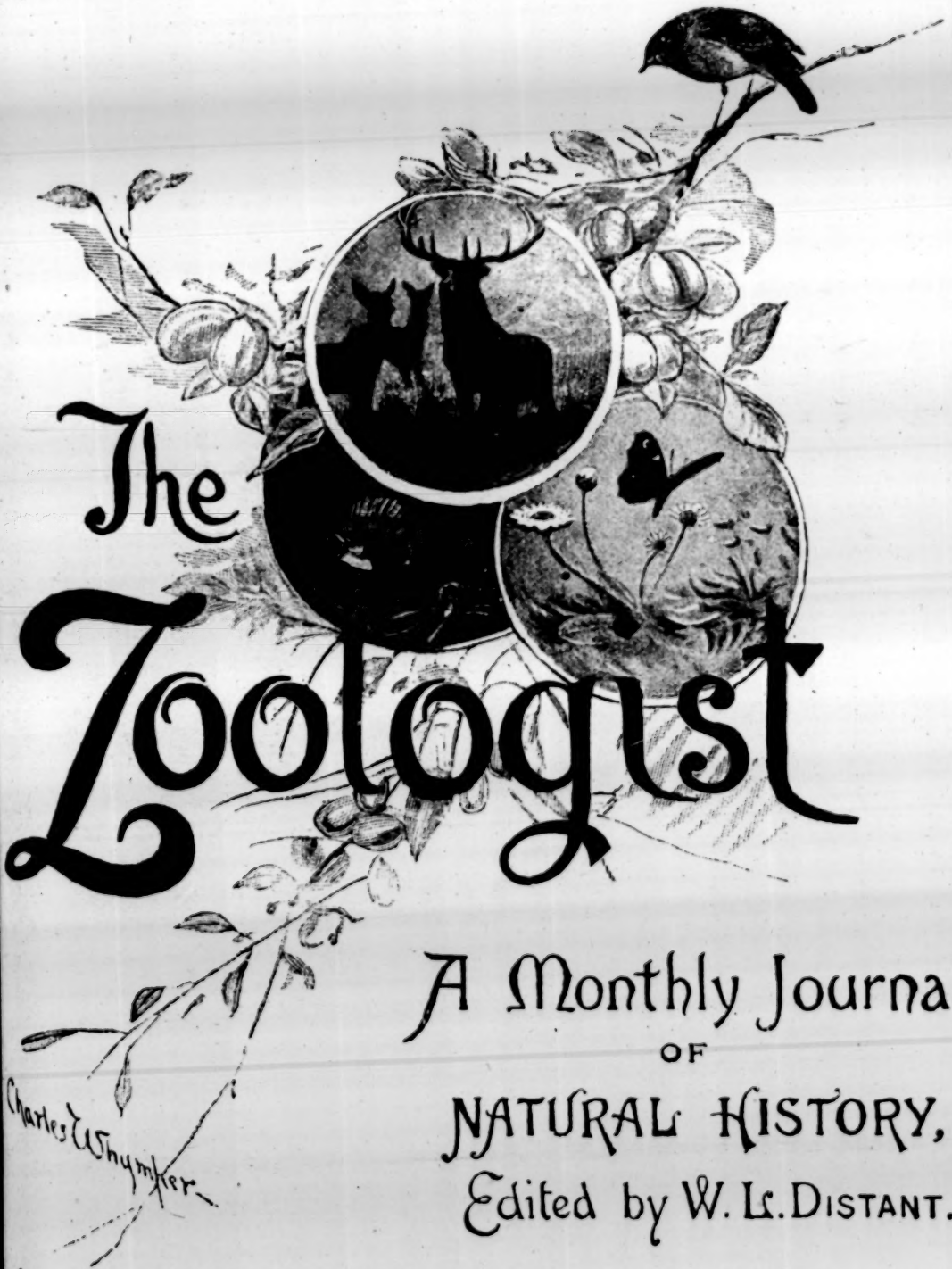
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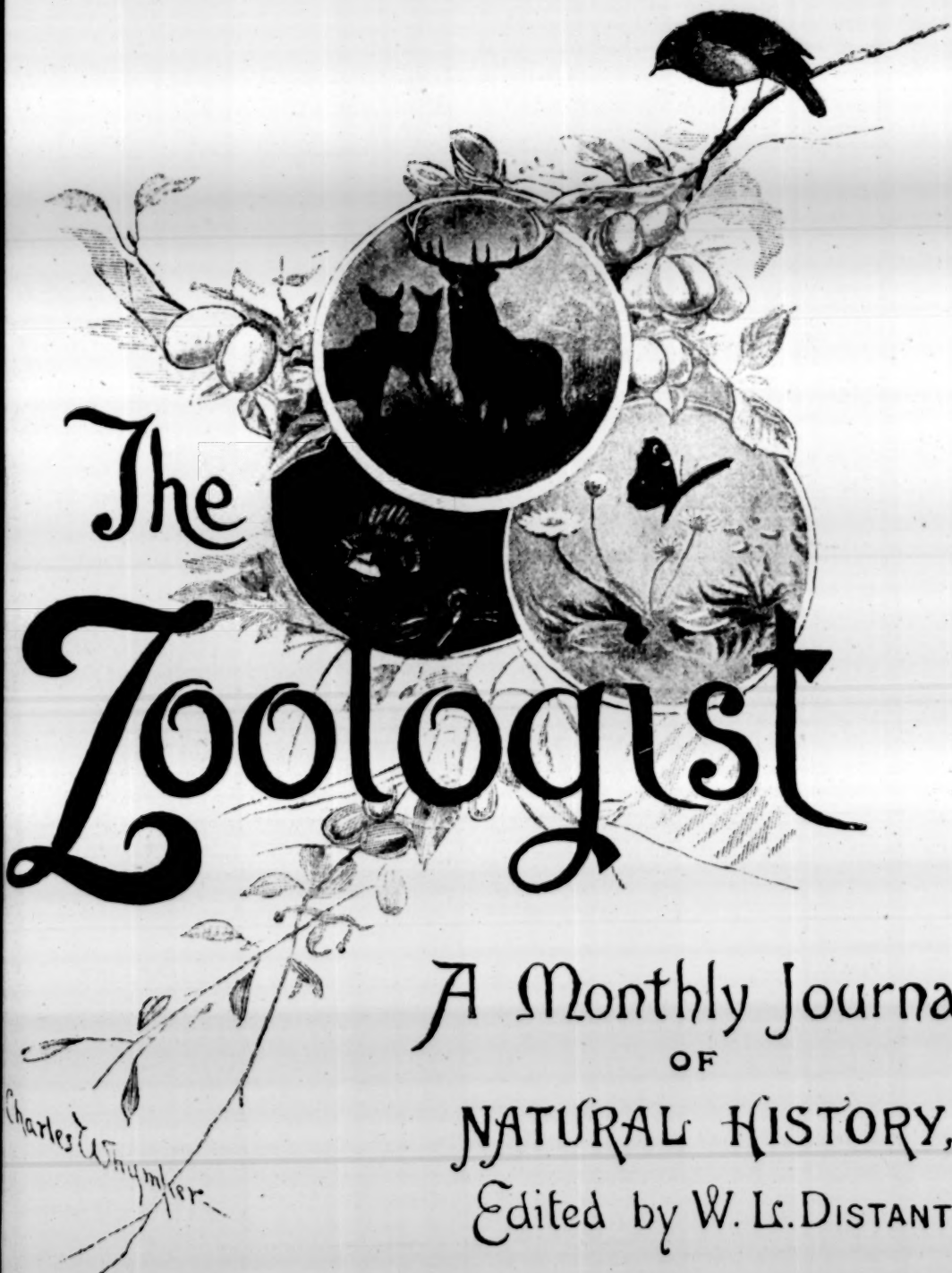
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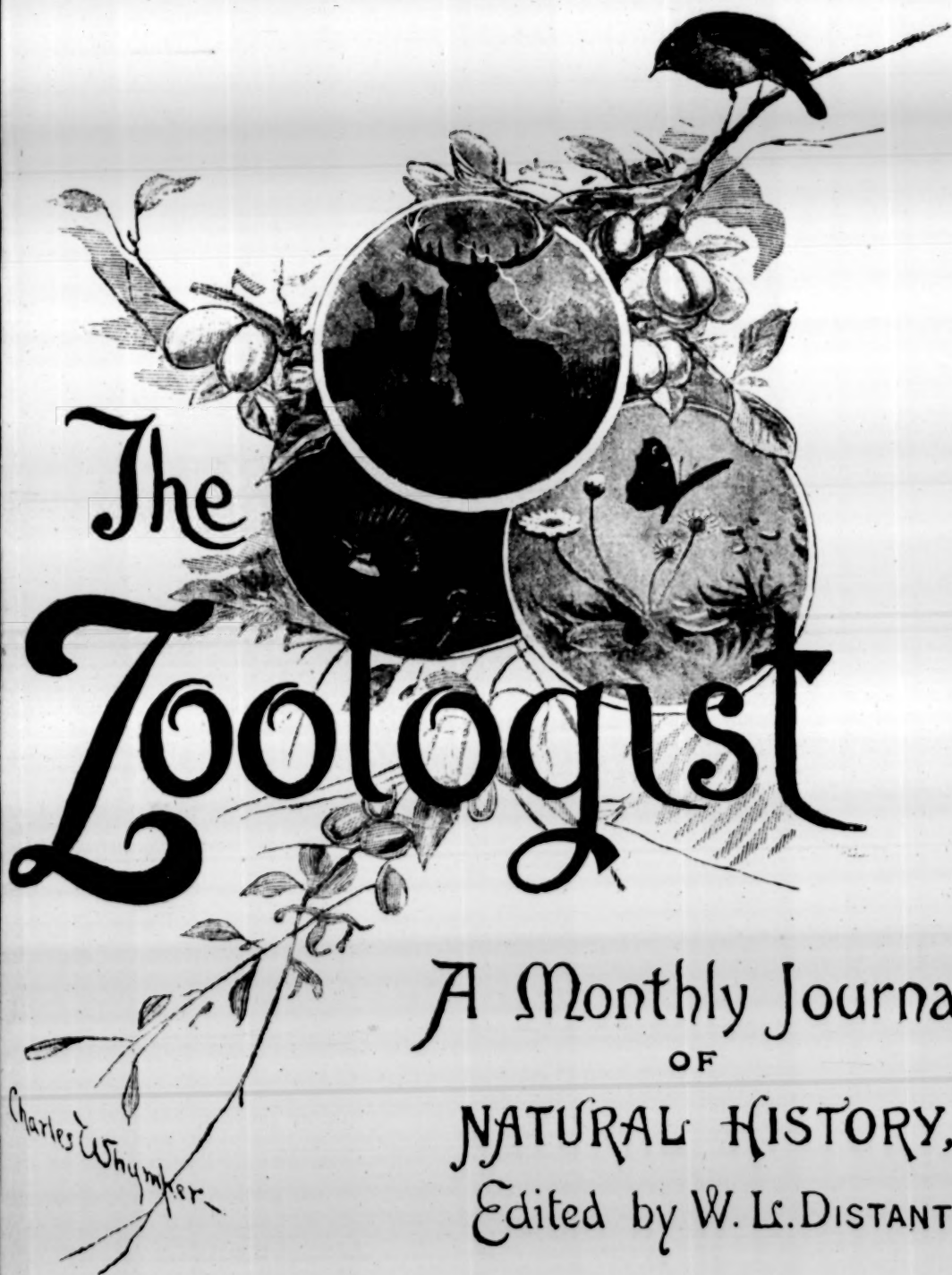
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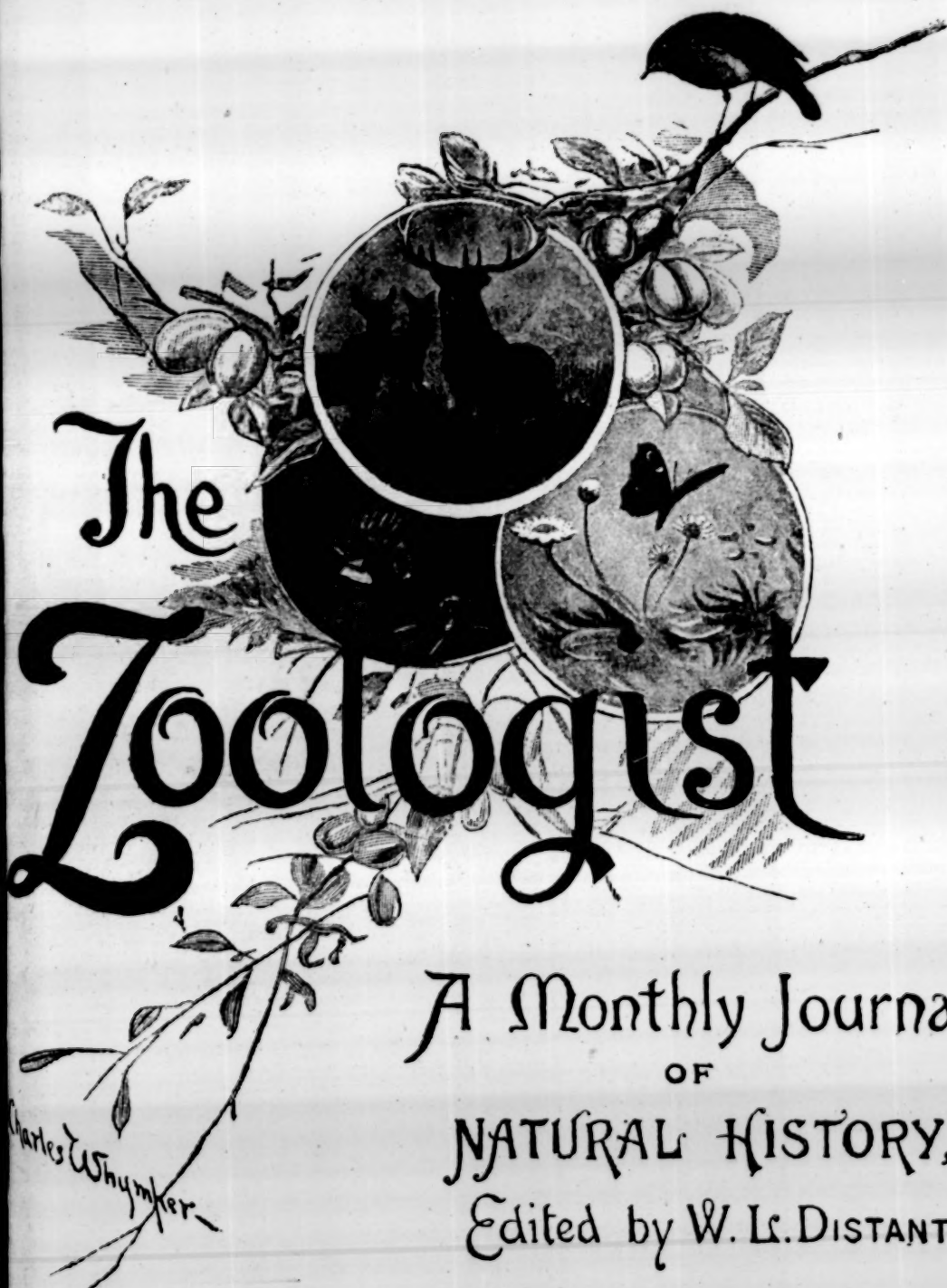
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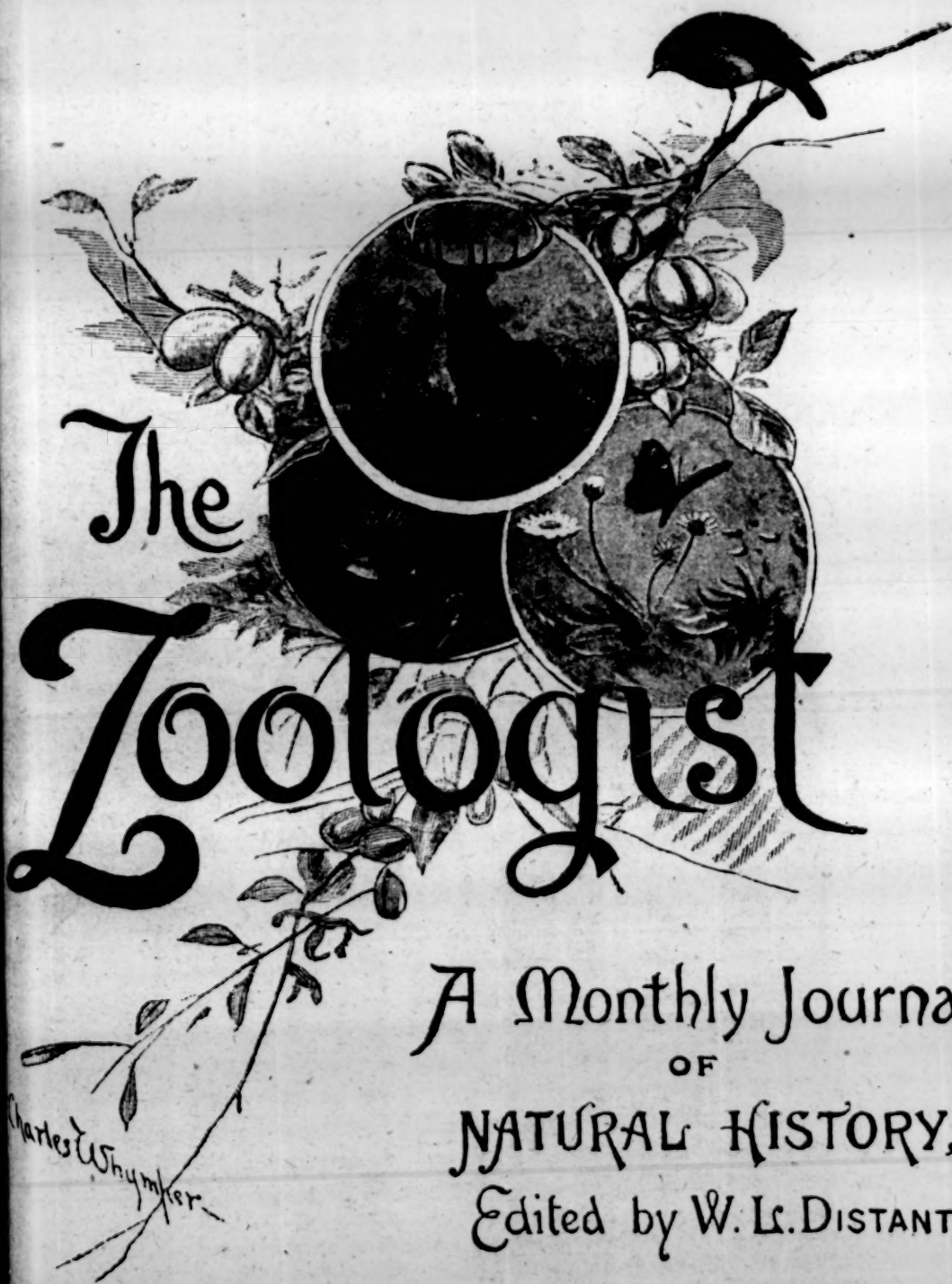
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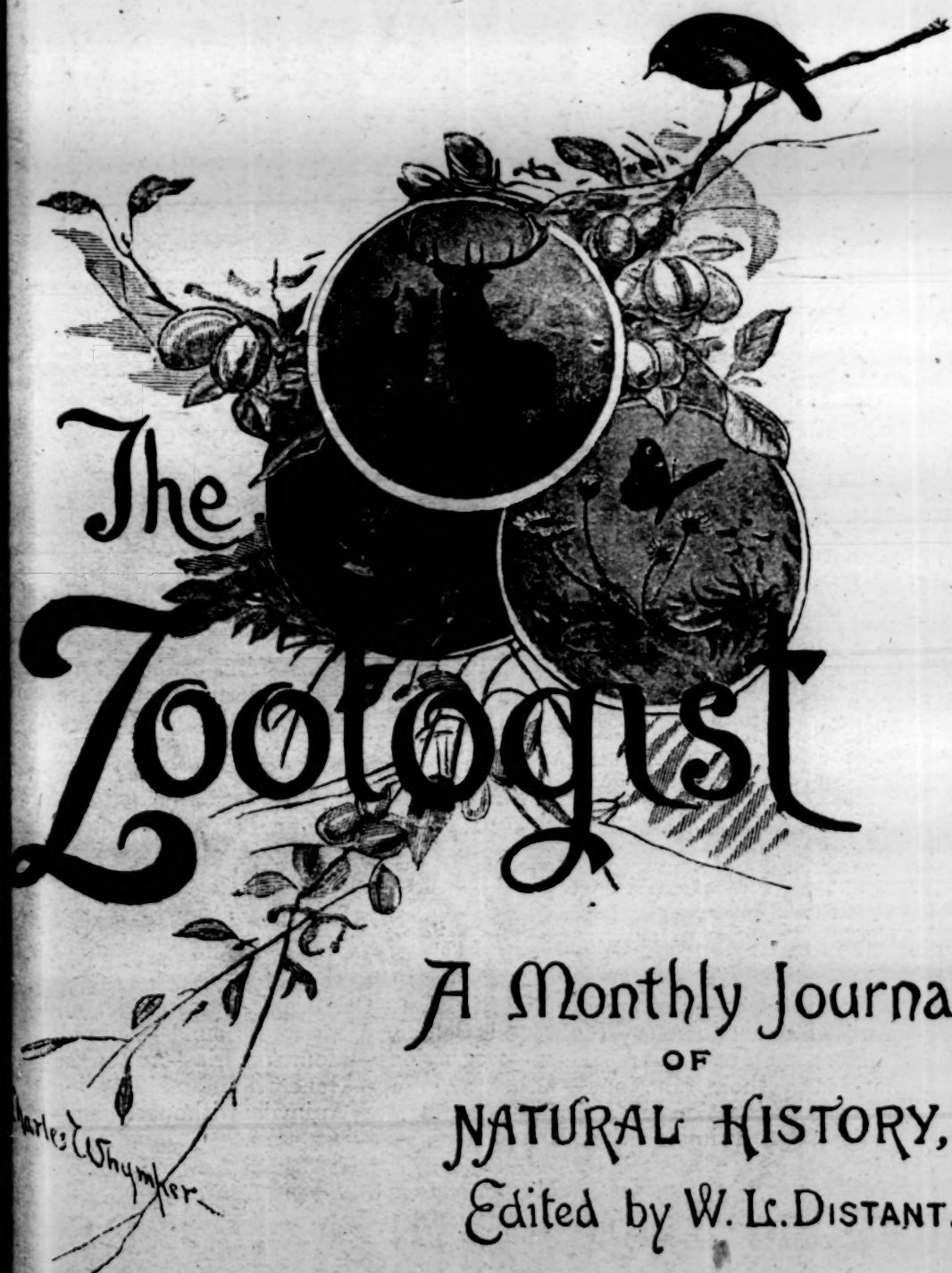
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